APPENDIX 3-E

FORMAT OF AN UNDERGROUND STORAGE TANK CLOSURE REPORT

Page

Cover Page

_____ A. Provide DOH UST facility ID Number

B. Provide facility name and address. If available, provide latitude and longitude coordinates

_____ C. Date report prepared

_____ D. Name, address, and telephone number of person/company preparing report

Table of Contents

1. Executive Summary

_____ A. Brief summary of the facility and UST history, future intended site use, reason for tank closure, closure activities, and the results of the site sampling for release verification. Also, summarize recommendations for further work at site, as appropriate.

2. Introduction/Purpose

_____ A. Brief statement of purpose

3. Background

A. Site Description

_____ · A brief description of the site location and surrounding area.

_____ · The location of any populations that could be affected by the release

B. Vicinity map or sketch (see Figure 3E.1)

_____ · North arrow

_____ · Streets

_____ · Surface water bodies

_____ · Water supply or injection wells

_____ C. A U.S.G.S. 7.5 minute topographic quadrangle map indicating the location of the site.

Note: All maps of the facility area should follow normal mapping conventions and should be easily read and interpreted. If this is not possible on one map, multiple maps are encouraged. If several maps are presented, all maps shall be in the same scale to aid in map comparisons. If geological maps are submitted, they should adhere to all normal geologic mapping conventions.

D. Site Plan(s) drawn to scale (See Figure 3E.2) showing details of the following:

_____ · The type and extent of onsite, ground surface cover (i.e. asphalt, concrete, soil, fill material, grass, etc.);

_____ · Locations of all products and waste fluid tanks (existing and removed), associated piping, sampling points (identify sample depths), and dispenser pumps

_____ · Adjacent streets, buildings and property lines

_____ · North arrow

_____ · Area of excavation

_____ · Locations of any stockpiled soil

_____ · Locations of field measurements

_____ · Utility conduits

_____ · Surface water drainage courses

_____ · Sewerage

_____ · Water supply or injection wells

_____ · Catch basins, dry wells

Page

E. Facility Information

_____ · A brief history and description of ownership and operation of existing and previously removed USTs (include any photos taken)

_____ · Results of initial surficial inspection of the area

_____ · Description of the use of product stored in tank(s)

F. UST Information

_____ · Number of UST(s) (existing and closed)

_____ · Summary of the results of any tank-tightness testing performed on UST(s) closed

_____ · History of substances stored in existing and previously removed UST(s)

_____ · UST(s) capacity

_____ · Age of UST(s)

_____ · UST(s) construction material

_____ · Copy of written notice of intent to close UST(s) sent to DOH.

G. UST Cleaning

_____ · Describe activities to pump out and recycle or dispose of all product, sludge, and rinsate (include manifests and determination of hazardous waste characteristics as per 40 CFR Part 261).

_____ · Describe or cite procedures followed to clean UST and associated piping (cite references).

_____ · Describe actions taken to monitor lower explosive limit (LEL).

H. UST Removal

_____ · Describe or cite procedures followed to remove tank or fill in place (indicate type of fill, cite references).

_____ · Date UST(s) removed and excavation(s) sampled.

_____ · Indicate depth at which bottom of tank(s) is located.

_____ · Describe and include photos of UST(s) condition and soil/ground-water conditions.

_____ · Indicate type and quantity of bedfill.

I. UST Excavation

_____ · Describe soil lithology at site and as encountered (indicate total depths) in excavation and soil borings and include any photos taken.

_____ · Provide a cross-sectional diagram of the longest sidewall of the UST section with PID measurements at depth intervals.

_____ · Indicate presence/absence of stained soils or unusual odors.

· Indicate observed or estimated depth to ground water, any seasonal variation and estimated effect of tidal influence on ground water level (cite references).

J. UST Disposal

_____ · Disposal facility (include manifest stating company name; where and when tanks and piping were disposed; see Figure 3E.3).

K. Stockpiled Soil

_____ · Indicate volume of soil stockpiled (contaminated and/or clean), related hydrocarbon vapor measurements, and related laboratory analytical data.

_____ · Describe proper soil management procedures undertaken, such as placing clean vs. contaminated segregated soil on durable plastic sheeting and covering soil as appropriate to prevent runoff, fugitive dust, and vapors, and to protect public health and the environment.

Page

4. Site Sampling for Release Verification

A. Soil and Ground-Water Sampling

_____ · Cross-sectional diagram showing specific location and depth of site sampling.

_____ · Describe site sampling procedures undertaken to collect and analyze all soil and water samples. Follow sampling guidance presented in Section 7 of this document.

_____ · Describe or cite sample control procedures followed, including types of sample collection containers used and method of appropriate sample preservation (see Section 7 of this document).

B. Chain-of-Custody

_____ · Dates and times of sampling and receiving

_____ · Sample ID correlating to field ID and lab ID

_____ · Signatures of all personnel relinquishing and receiving sample

_____ · Preparation and analytical methods requested

C. Field Measurement

_____ · Description of field instrument(s) used

_____ · Calibration standards, frequency

_____ · Relative instrument response to various petroleum compounds based on calibration standard.

_____ · Field measurement procedures (e.g. jar or baggie headspace, etc.)

_____ · Table of Field Measurement Results: Results of field measurements presented in a comprehensive table with sample locations keyed to site plan (see Figure 3E.4)

Page

D. Laboratory Analytical Results

_____ · In general, follow recommended sample preparation and analytical methods presented in Section 7.

_____ · Table of Analytical Results: Present analytical results in a comprehensive table with the sample ID, sample location (keyed to site plan) including sample depths, preparation and analysis methods, constituent concentration and method detection limits. All tabulated results should be expressed in parts per million (mg/kg or mg/L). (see Figure 3E.5.)

_____ · Formal analytical results should be appended to the report. Results must be reported on laboratory letterhead and include the following:

_____ - Date sampled, received (by all parties), extracted, analyzed, and reported

_____ - Condition of samples upon receipt by laboratory (including notations of sample preservation--or lack of--broken sample custody seals, etc.)

_____ - Methods of preparation (extraction) and analysis

_____ - Detection Limits

_____ - Concentration of analyte, preferably expressed by (mg/kg, mg/l) ppm, (ug/kg, ug/l) ppb

_____ - Quality Assurance and Quality Control (QA/QC) protocol should include:

_____ - Field and reagent blank

_____ - Matrix spike and matrix spike duplicates

_____ - Calibration check standard

_____ - Surrogate recoveries

_____ - Acceptable ranges

_____ - Signature of analytical testing personnel and the lab director/manager

_____ · Samples must be extracted and analyzed in accordance with recommended maximum holding times

5. Conclusions and Recommendations

_____ A. Indicate future uses of area related to the former UST locations.

_____ B. Briefly discuss potential for human exposure posed by existing site conditions.

_____ C. Recommend no additional work for the UST facility if appropriate.

_____ D. Recommend any additional work (i.e. initial site characterization, soil and ground-water investigations, etc.)

Appendices

_____ Table with summary of UST Closure Data (see Table 3E.1)

_____ Submit "Notification for Underground Storage Tanks," modified permit pursuant, or a written notice pursuant as determined appropriate

_____ Vicinity Map

_____ Site Plan and UST Diagram

_____ UST System Disposal Certification (see Fig 3E.5)

_____ Laboratory Data Reports

_____ Sample QA/QC Results

_____ Sample Chain-of-Custody

_____ Photos (dated and explained)

_____ Block from Intro/Purpose

_____ 40-Hour Health and Safety Certificates for Site Personnel

Page

_____ Site Health and Safety Plan

_____ Identification of all consultants, contractors, their duties and responsibilities for each activity, and the name and telephone number of person(s) designated as "project coordinator" for all activities.

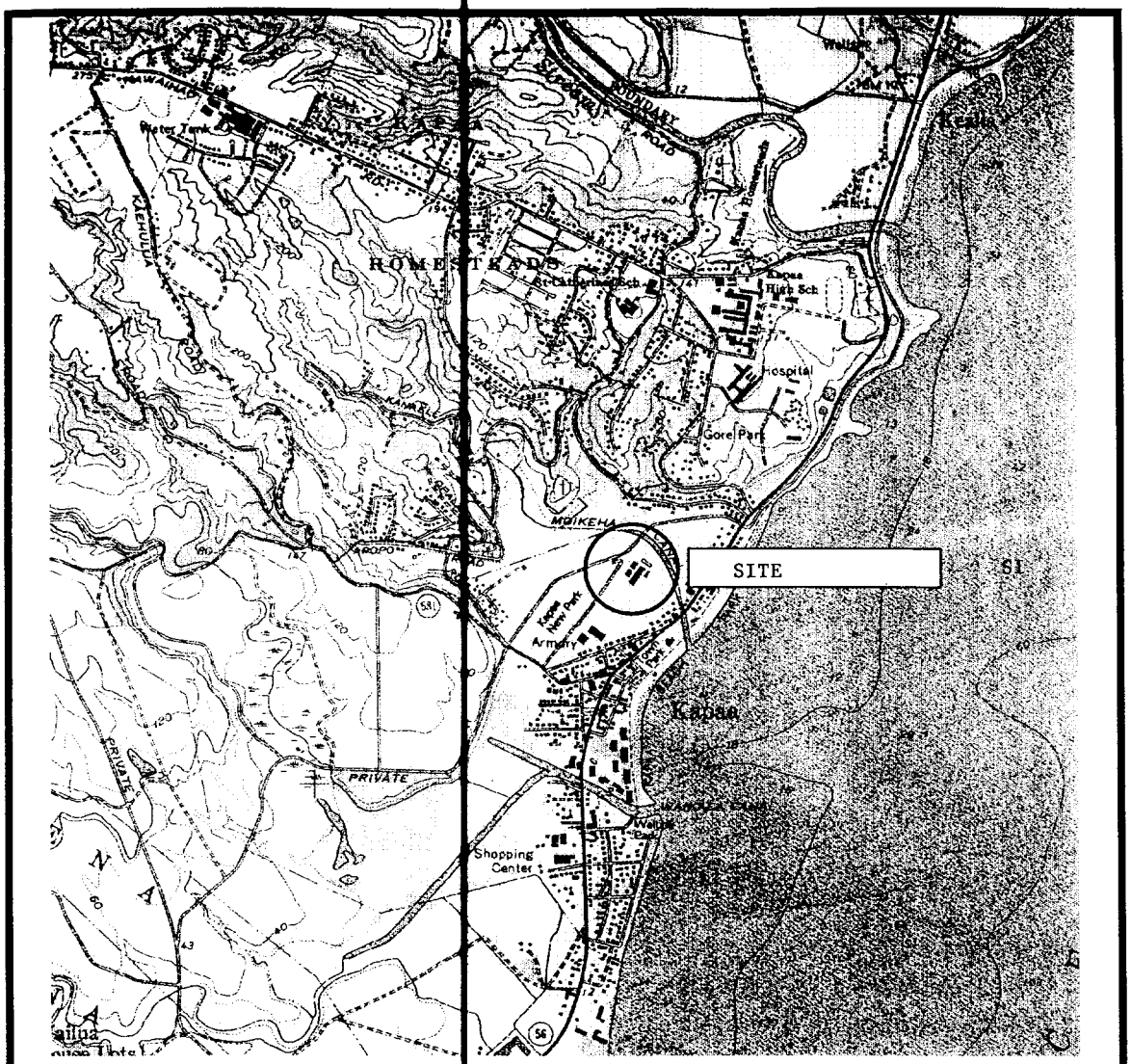

Figure 3E.1 Vicinity Map

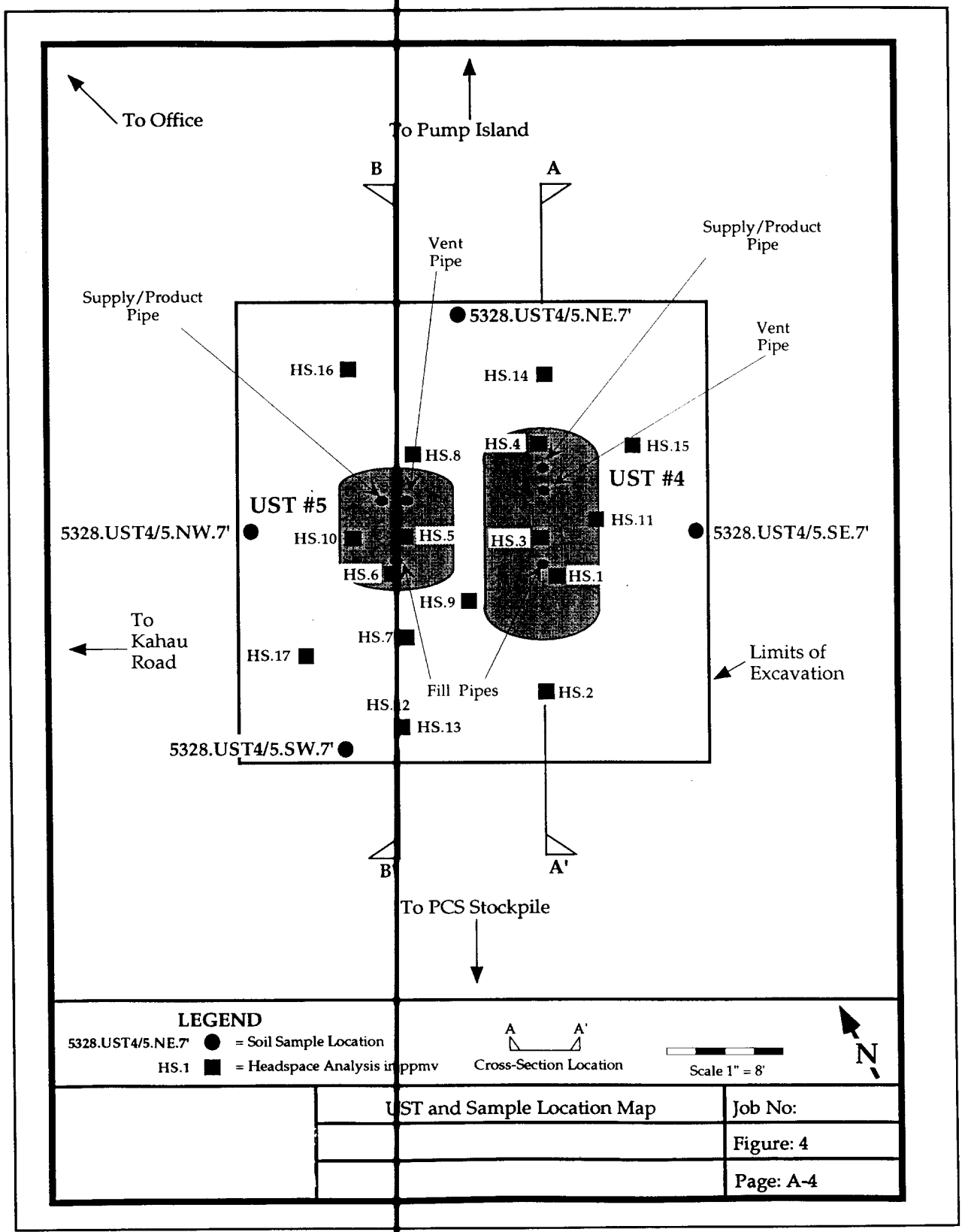

Figure 3E.2 Site Plan

Table 4: Field Screening/Headspace Analysis

Sample ID	Depth to Sample (from ground surface)	PID Reading (ppmv)
HS.1	2 Feet	5.5
HS.2	2 Feet	0.0
HS.3	2 Feet	0.0
HS.4	2 Feet	0.0
HS.5	2 Feet	0.0
HS.6	2 Feet	0.0
HS.7	4 Feet	0.0
HS.8	4 Feet	0.6
HS.9	6 Feet	0.1
HS.10	4 Feet	2.7
HS.11	4 Feet	0.4
HS.12	7.6 Feet	58.7
HS.13	7.6 Feet	8.3
HS.14	5.5 Feet	209.3
HS.15	6 Feet	12.8
HS.16	2 Feet	1.0
HS.17	6 Feet	171.1
HS.18	9 Feet	50.5
HS.SW	7 Feet	189.0
HS.NW	7 Feet	534.0
HS.NE	7 Feet	369.0
HS.SE	7 Feet	40.7
HS.1P	2.6 Feet	24.1
HS.2P	2.6 Feet	14.4

Figure 3E.3 Table of Field Measurement Results

Figure 3E.4 Table of Analytical Results

Soil Chemical Analytical Results

Sample		Lead	BTEX				PAHs				Petroleum Hydrocarbons	
ID	Date	(Total)	Benzene	Toluene	Ethyl-benzene	Xylenes (Total)	Benzo(a)-pyrene	Acenaph-thene	Fluor-anthene	Naphth-alene	TPH-G	TPH-D
USTs 4 & 5												
UST4/5.SW.7' (A+B)	10/8/98	<1	<0.03**	<0.03**	<0.03**	<0.03**	<0.01**	<0.1UJ,D**	<0.1**	<0.1UJ,D**	60**	<30**
UST4/5.NW.7' (A+B)	10/8/98	<1	<0.03**	0.14**	<0.03**	<0.03**	<0.5D**	<5UJ,D**	<5D**	<5UJ,D**	5,000**	<30D**
UST4/5.NE.7' (A+B)	10/8/98	<1	<0.03**	0.16**	<0.03**	<0.03**	<0.5D**	<5UJ,D**	<5D**	<5UJ,D**	5,000**	<30D**
UST4/5.SE.7' (A+B)	10/8/98	<1	<0.005**	<0.005**	<0.005**	<0.005**	<0.01**	<0.1UJ,D**	<0.1**	<0.1UJ,D**	20**	<5.0**
PIPING												
P4.6"	10/9/98	...	...	...	...	...	...	...	...	...	...	<5.0
P5.6"	10/9/98	...	...	...	...	...	...	...	...	...	20	...
P4/5.6".1	10/9/98	...	...	...	...	...	...	...	...	...	<10	<5.0
P4/5.6".2	10/9/98	...	...	...	...	...	...	...	...	...	<10	<5.0
P5.6" (A+B)	10/23/98	<10	<0.005	<0.005	<0.005	<0.005	<0.01	<0.1	<0.1	<0.1	...	...
STOCKPILE												
SP4/5 (1+2)	10/8/98	<1**	<0.005**	<0.005**	<0.005**	0.005**	<0.01**	<0.1**	<0.1**	<0.1**	<10**	<5.0**
SP4/5.1 (A+B)	11/11/98	73	<0.005	<0.005	<0.005	<0.005	<0.1	<1.0	<1.0	<1.0	<20	<5.0
SP4/5.2 (A+B)	11/11/98	52	<0.005	<0.005	<0.005	<0.005	<1.0	<1.0	<1.0	<1.0	20	<5.0
SP4/5.3 (A+B)	11/11/98	50	<0.005	<0.005	<0.005	<0.005	<0.1	<1.0	<1.0	<1.0	10	<5.0
SP4/5.4 (A+B)	11/11/98	55	<0.005	<0.005	<0.005	<0.005	<0.1	<1.0	<1.0	<1.0	10	<5.0
DOH-SALs*		**400 de**	**1.7**	**34**	**0.5**	**23**	**1.0de**	**18 (sat)**	**11 (sat)**	**41 (sat)**	**2,000**	**5,000**

Notes:
Results reported in mg/Kg

Flags:
* Soil Action Levels Based on Rainfall ≤ 200 cm/yr & drinking water source not threatened.
** Cooler temperature 7.3 C upon arrival at laboratory.
... Not analyzed for this analyte.
(sat) Saturation concentration, groundwater-protection concerns dominate.
de Direct-exposure concerns dominate.
UJ Sample quantation limit is estimated.
J Sample quantation limit is estimated.
D Surrogate diluted out of sample.

Abbreviations
TPH - Total Petroleum Hydrocarbons (fingerprint)
PAHs - Polynuclear Aromatic Hydrocarbons

LEGEND
≥ Laboratory Reporting Limits
≥ DOH - SAL

UST SYSTEM DISPOSAL CERTIFICATION

PART A: (To be Completed by Project Coordinator)

1. UST System Removed From:

Facility Name: _____ UST Facility ID No.: _____

Address: _____

2. Information on the Closed UST System:

Size in gallons: _____ Date of Removal: _____

Construction of Tank: _____

Construction of Piping: _____

Date of Disposal: _____

3. UST System Disposed/Recycled at:

Facility Name: _____

Address: _____

Contact: _____ Phone No.: ( ) _____

I hereby certify that the described UST system (tank and associated piping) from the aforementioned facility has been properly removed, cleaned, and transported in compliance with applicable Federal and State laws, rules, and regulations and delivered to the aforementioned disposal/recycling facility.

Name: _____ Title: _____

Company Name: _____

Signature: _____ Date: _____

PART B: (To be Completed by Disposal/Recycling Facility Owner/Manager)

Disposal/Recycling Facility Name: _____

Address: _____

Contact: _____ Phone No.: ( ) _____

I hereby certify that the above described UST system (tank and associated piping) has been properly demolished and/or disposed of in compliance with applicable Federal and State laws, rules, and regulations.

Name: _____ Title: _____

Signature: _____ Date: _____

Figure 3E.5 UST System Disposal Certification

Table 1

Table 3E.1 UST Summary

UST	Date Installed	Capacity	Construction	Substances Stored	Past History (specify dates)		Date Closed	Date Removed
					Leaks	Repairs		
#1								
#2								
#3								
#4								
#5								
#6								